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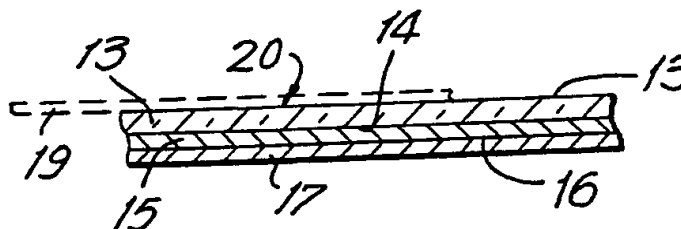
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(71)(72) Applicants and Inventors: SALACUSE, Frank, S. [US/US]; 184-08 Jamaica Avenue, Hollis, NY 11423 (US). MARKUS, Franklyn, M. [CA/CA]; 755 Boulevard Lebeau, St. Laurent, Quebec H4N 1S5 (CA). (74) Agent: SUTTON, Paul, J.; Sutton, Magidoff & Amaral, 420 Lexington Avenue, New York, NY 10170 (US).			

(54) Title: SEGMENTED ADHESIVE TAPE



(57) Abstract

A segmented pressure sensitive adhesive tape is disclosed. The tape includes a backing (13) scored transversely at regularly spaced intervals, the spacing of such score lines (20) being from about two-thirds of the width of the said tape to about one and one-third the width of said tape. The backing member is coated with a continuous layer of pressure sensitive adhesive (15) optionally covered by a release layer (17).

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SEGMENTED ADHESIVE TAPEBACKGROUND OF THE INVENTIONField of the Invention

The present invention is directed to improvements in adhesive tape and more particularly to a unique pressure sensitive adhesive tape.

The Prior Art

Adhesive tapes, and particularly pressure sensitive adhesive tapes, conventionally comprise an elongate backing or web, one or both faces of which have been coated with a pressure sensitive adhesive. The backing material may comprise any of a series of polymeric or cellulosic compositions, the tape product being conventionally sold as a coil comprised of a multiplicity of convolutions. The coil is typically mounted on a dispenser frame having a serrate edge, enabling an increment of the tape to be withdrawn and severed from the roll by causing the tape to be sheared across the serrate edge of the dispenser. Such tapes described above have been sold with and without release coated webs engaged against the pressure sensitive coating.

The conventional pressure sensitive tapes hereinabove described, while enjoying wide-spread use, suffer from certain draw backs. When a tape length is severed from the roll by urging same against the serrate cutter member described there necessarily results a ragged edge. Additionally, conventional tapes may be applied to a surface only in a linear configuration. Any attempt to apply the tape in an arcuate or angular configuration results in wrinkling. Accordingly it is necessary to use discreet individual lengths of conventional

tapes where the tapes are to be applied in angular relation one to the other. Similar undesirable wrinkling occurs where attempts are made to apply conventional tapes to a curved three-dimensional surface.

Summary of the Invention

The present invention may be summarized as directed to an improved adhesive tape, and particularly to a pressure sensitive adhesive tape characterized in that discreet increments may be partially or completely severed from an elongated roll supply without the use of serrate cutters, whereby the lead and trailing edges of the separated increment form straight edges. A further characterizing feature of the invention resides in the provision of a pressure sensitive tape which is capable of being applied to curved surfaces or to planar surfaces in arcuate or zig-zag patterns without wrinkling of the tape.

Still more particularly, the invention is directed to a pressure sensitive tape product comprising an elongated strip or web, preferably of polymeric or cellulosic material, which comprises a carrier or backing, one or both surfaces of which carries a pressure sensitive coating. The tape of the present invention is characterized by the provision of regularly spaced score lines formed in the backing or web, the spacing of the score lines being predetermined and preferably but not necessarily varying within the range of from about two-thirds of the width of the web to about one and one-third times the width of the web. The score lines enable the web to be parted or controllably torn along such lines, either completely to thereby remove an increment from the roll, or partially whereby adjacent but connected increments may be oriented at a variety of angles with respect to each other.

The tape according to the present invention is particularly useful in allowing increments of selected lengths comprised of multiples of segments to be neatly severed from the body of the roll. A further highly desirable use of the tape of the instant invention is as a masking tape since the tape may be readily applied around corners and over non-planar surfaces to be masked.

It is accordingly an object of the invention to provide an improved adhesive tape.

A further object of the invention is to provide an improved pressure sensitive tape whereby increments thereof may be neatly severed from a roll without the need for cumbersome and expensive dispensers.

Still a further object of the invention is the provision of a tape of the type described which may be applied in non-linear patterns and over curved surfaces without wrinkling or buckling.

Brief Description of the Drawings

In order to attain the above noted objects and such other and further objects as may appear herein or be hereinafter pointed out reference is made to the accompanying drawings wherein:

Fig. 1 is a plan view of a spool or roll of tape according to the present invention;

Fig. 2 is a magnified fragmentary vertical section taken along the line 2-2 of Fig. 1;

Fig. 3 is a plan view of a length of tape configured in an arcuate pattern; and

Fig. 4 is a plan view of a length of tape according to the invention, arrayed in a zig-zag pattern.

Detailed Description of the Drawings

Referring now in more detail to the drawings, and particularly to Fig. 1 thereof, there is disclosed a roll of tape 10 in accordance with the invention, the roll comprising a length of tape 11 mounted on a spool 12. The tape includes a strip backing member or web 13 which optionally may be formed of any of a number of selected polymeric compounds such as acrylics or vinyls, or may be formed of paper or like cellulosic composition.

One surface 14 of the backing member 13 is coated with a continuous pressure sensitive layer 15. The layer 15 may be of any conventional pressure sensitive adhesive composition. Optionally the lower surface 16 of the pressure sensitive layer 15 may be covered by a release layer 17. Similarly, the upper surface 18 of the backing member 13 may be coated with a further pressure sensitive layer 19.

A characterizing feature of the present invention resides in the provision of regularly spaced, transversely directed parting or score lines 20 formed in the backing member 13. Preferably, but not at all necessarily, the spacing of the score lines 20 is from about two-thirds of the width of the backing web to slightly greater than the width of the backing web.

In use, a length of tape is drawn from the spool 12 without the tape parting in a direction substantially in alignment with the longitudinal axis or direction of the tape. Without the need of a cutting edge, such as the type normally seen on tape dispensers, an increment of such tape comprised of one or more of the segments 21 may be severed from the main body of the tape by applying a torque or twisting movement in registry with one of the score lines 20. An increment of removed tape has the unique ability of being applied in an arcuate pattern shown in Fig. 3 or in a zig-zag pattern as shown in Fig. 4 by simultaneously pressing the pressure sensitive layer of the tape against the surface to which the tape is to be mounted and urging the un-applied portions of the tape into the desired angular relation to the applied portions.

The parting of one segment 21 from its adjacent segment is possible either by urging a portion of a segment at or proximate a parting or score line 20 out of the plane of strip 15 relative to the adjoining segment, or by stressing in tension a portion of a parting or score line 20 at or relatively near that portion of the score line 20 where it terminates at either side of strip 15.

It will be readily recognized that there is virtually no limitation to the configurations in which the tape may be applied, or the uses of which the tape is susceptible. By controlling the spacing of the score lines (or distance between them), one may produce tape which is more or less capable of forming arcs of smaller radii. In addition to use as a

masking, as previously referred to, the tape according to the present invention may be used as a temporary hem binding, the tape being particularly adapted for such use due to its ability to follow the angular configurations experienced.

The reader will appreciate that while the expressions "arc" or "arcuate" are used herein, such configurations are actually approximated by the combined angular orientation of a plurality of segments which effectively yield the equivalent.

In accordance with an embodiment of the invention, the score lines 20 may be formed more deeply in the center portions of the web and more shallow, or not at all in the areas of 22 immediately adjacent the side margins 23, 24 of the web. By providing continuous un-scored or only partially scored portions of the backing web in the areas 22, the possibility of inadvertent rupture of an increment being withdrawn from the spool is minimized, and also the remaining attached portions of the web define fulcrums or pivot points facilitating the tape being applied in arcuate or angular configurations.

As will be evident to those skilled in the art and familiarized with the instant disclosure, numerous variations in details of construction may be made without departing from the spirit of the invention. Accordingly, the invention is to be broadly construed within the scope of the appended claims.

WHAT IS CLAIMED IS:

1. A tape product, comprising: a strip of substantially continuous material, adhesive means carried by said strip, said strip defining parting means spaced along the length of said strip for enabling either partial or complete separation of portions of said strip from one another at the option of the user, said parting means including spaced predefined lines of weakness extending substantially transversely with respect to the longitudinal direction of said strip, such that said strip exhibits tensile strength characteristics in said longitudinal direction of sufficient magnitude to resist tearing upon pulling a length of said strip from a coiled roll, said strip capable of being partially separated along a plurality of said lines of weakness so as to substantially define an arcuate continuous area of adhesive tape along a length thereof which is characterized by the absence of wrinkling.

2. A new article of manufacture a segmented pressure sensitive tape comprising an elongate backing web, a continuous pressure sensitive adhesive coating on one face of said web, a plurality regularly longitudinally spaced apart score lines formed in and extending transversely across said web, said score lines projecting partially but not entirely through the thickness of said web.

3. An article in accordance with claim 2 wherein said backing web comprises a polymeric material.

4. An article in accordance with claim 3 wherein the other face of said backing web includes a second said pressure sensitive adhesive coating.

5. An article in accordance with claim 3 and including an elongate release web in contact with said pressure sensitive adhesive coating.

6. An article in accordance with claim 3 wherein said score lines are disposed perpendicular to the side margins of the said web.

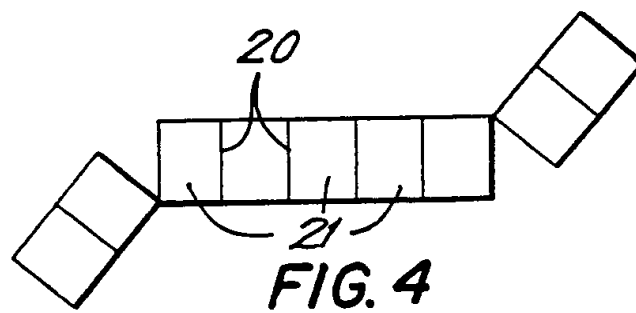
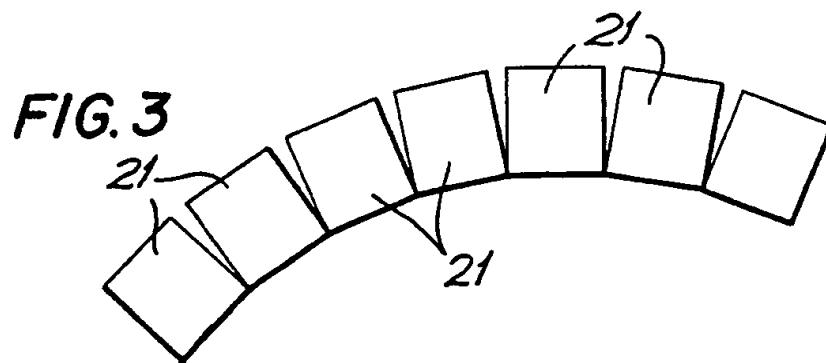
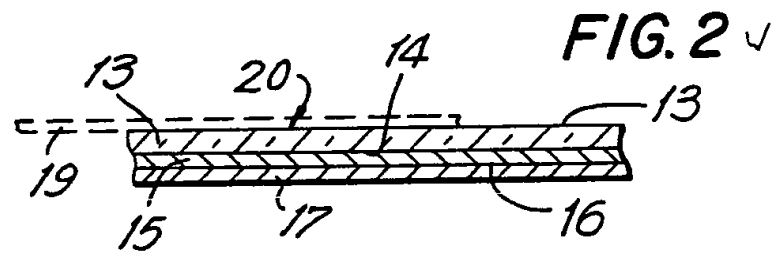
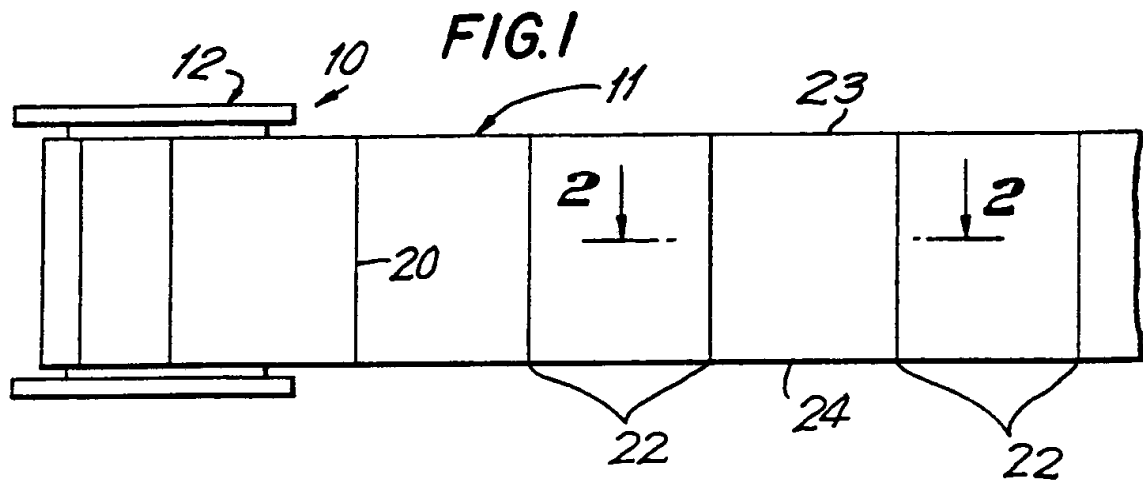
7. An article in accordance with claim 2 wherein the depths of said score lines within said web is greater at intermediate portions at said score lines than at the portions at said score lines adjacent the margins of said web.

8. An article in accordance with claim 2 wherein the spacing between adjacent said score lines is within the range of from about one-third less than the transverse dimension of said web to about one and one-third times said transverse dimension.

9. As a new article of manufacture a roll of pressure sensitive segmented tape comprising an elongate backing web, a continuous pressure sensitive adhesive coating on one face of said web, a plurality of score lines formed transversely across said web, the spacing between adjacent said score lines being in the range of from about two-thirds the width of said web to about one and one-third the width of said web, said score lines extending across at least substantially the entire width of the said web and penetrating to a greater depth of said web at central portions of said web, the depth of said score lines adjacent the side margins of said web being less than the depth of said score lines at central positions across said web.

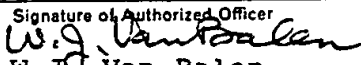
10. An article of manufacture in accordance with claim 9 wherein said web includes un-scored portions in registry with said score lines immediately adjacent to side margins of said web.

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INTERNATIONAL SEARCH REPORT

International Application No. PCT/US89/01276

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶		
According to International Patent Classification (IPC) or to both National Classification and IPC		
Int. C1 4 B32B 3/30		
US C1 428/40, 43, 138, 343, 352, 906		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
US	428/40, 41, 42, 43, 137, 138, 343, 352, 906	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸		
III. DOCUMENTS CONSIDERED TO BE RELEVANT ⁹		
Category [*]	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
Y	US, A, 1967444 (Lowe) 24 July 1934 Entire document	1-9
Y	US, A 1331667 (Palm, Jr.) 24 February 1920, Entire document	1-9
Y	US, A, 2636,297 (Johnson) 28 April 1953. Entire document	1-9
<p>[*] Special categories of cited documents: ¹⁰</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&" document member of the same patent family</p>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search		Date of Mailing of this International Search Report
26 June 1989		12 JUL 1989
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ISA/US		 W.J. Van Balen